

Amendments to the Claims

The listing of claims will replace the previous version, and the listing of claims:

Listing of Claims

1-2. (Canceled)

3. (Previously presented) A parameter tuning device according to claim 6, wherein said parameter tuning means includes an evaluation value computing means for obtaining a first evaluation value based on a linear scale and a second evaluation value based on a log scale to make a sum of the first evaluation value and the second evaluation value as an evaluation value of the chromosome in a selection process in the genetic algorithm.

4. (Previously presented) A parameter tuning device according to claim 6, wherein said parameter tuning means includes normalization for unifying a scale of data in the selection process in the genetic algorithm.

5. (Previously presented) A parameter tuning device according to claim 6, wherein said parameter tuning means includes search method switching means for switching to local searching means when a parameter tuning process in the genetic algorithm satisfies a predetermined condition.

6. (Previously presented) A parameter tuning device, comprising:

parameter tuning means for defining chromosomes having a plurality of respective parameters of a physical model for performing simulation of a semiconductor device as a gene and optimizing the plurality of parameters of said physical model

using a genetic algorithm based on characteristic measurement data of a test-manufactured semiconductor device, and

said parameter tuning means including a child chromosome generating means, said child chromosome generating means obtaining a center of gravity of a parent chromosome group in a vector space selected in a crossover process in the genetic algorithm; determining a hyper-polyhedron on a vector space shown by a peak of vectors which extend to each selected parent chromosome from said center of gravity and are respectively multiplied by predetermined times; and generating a child individual using a uniformly distributed random number so as to be housed inside said hyper-polyhedron.

7. (Currently amended) A parameter tuning device according to claim 6, wherein when  $p$  is the number of parent individuals selected,  $C$  is a vector indicating the chromosome of the child individual generated,  $P_k$  is a vector indicating the chromosome of the selected parent individual,  $u(0,1)$  is a uniformly distributed random number in an interval  $[0,1]$ , and  $\varepsilon$  is a constant given by  $\sqrt{(p+1)}$ , one child individual is generated by Equation 1 below using said center of gravity  $G$  and said uniformly distributed random number  $u$ ;

[Equation 1]

$$C = x_p + C_p$$

$$x_k = G + \varepsilon(P_k - G)$$

$$C_k = \begin{cases} 0(k=0) \\ r_{k-1}(x_{k-1} - x_k + C_{k-1})(k=1, \dots, p) \end{cases}$$

$$r_k = (u(0,1))^{\frac{1}{k-1}}.$$